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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,766	04/13/2001	Keiji Emoto	862.C2199	4154

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EXAMINER

RODRIGUEZ, PAUL L

ART UNIT	PAPER NUMBER
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2125

15

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,766

Applicant(s)

EMOTO, KEIJI

Examiner

Paul L Rodriguez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/2/04 and 6/2/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39 and 41-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39, 41-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed 6/2/04 and 4/2/04 have been received and considered. Claims 39 and 41-50 are presented for examination.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/2/04 has been entered.

Claim Objections

3. Claim 50 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 49 recites that the double pipe is "coupled to the movable stage" and claim 50 which depends from claim 49 recites that the double pipe is "connected to the moveable stage". The Examiner considers coupling to and connecting to as the same limitation. Therefore, claim 50 does not further limit the previous claim.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 46, 49 and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "nearly free" in claim 46 is a relative term which renders the claim indefinite. The term "nearly free" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is understood that this issue was raised and addressed in the previous office actions, however the term is still considered indefinite.

7. Claim 49 recites the limitation "the chamber" in line 4. There is insufficient antecedent basis for this limitation in the claim. Claim 39 refers to "a chamber" and claim 49 refers to "a vacuum chamber", unclear which "chamber" line 4 is referring to.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 39, 43-47, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno (U.S. Pat 6,110,274) in view of Hosono et al (U.S. Pat 4,906,496).

Okuno teaches (claim 39) a pipe structure (figure 2, col. 8 lines 46-48) comprising a double pipe (figure 2, col. 8 lines 46-48) having an inner pipe and an outer pipe covering an outside of the inner pipe (figure 2, col. 8 lines 46-53), a discharge mechanism for discharging fluid in a space between the inner pipe and the outer pipe (figure 2, col. 8 lines 48-51, col. 9 lines 1-5), wherein the double pipe is in a chamber (figure 1, reference number 1), pressure in a space

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between the chamber and the outer pipe is less than pressure in a space between the inner pipe and the outer pipe (col. 7 lines 48-55) and the pressure in the space between the inner pipe and the outer pipe is greater than the pressure in the chamber (inherent if reference number 1, the chamber, is held at vacuum, col. 7 lines 48-55) and less than pressure in the inner pipe (figure 2 shows fluid flow from the inner pipe to the outer pipe, it is inherent that the pressure in the outer pipe is less than the inner in order to create the fluid flow as shown), (claim 43) wherein said double pipe keeps a vacuum space between the inner pipe and the outer pipe (again, because the flow shown in figure 2 from inner to outer, it is inherent that there is a pressure differential between the inner and outer pipe sections), (claim 49) further comprising a movable stage in a vacuum chamber having a vacuum atmosphere (figure 1, 2, col. 7 lines 48-55) wherein said double pipe is coupled to the movable stage (figure 1, 2, col. 8 lines 29-53) and an outer surface of said double pipe is exposed to the vacuum atmosphere in the chamber (figure 1), (claim 50) wherein said double pipe is connected to the movable stage (figure 1, 2 col. 8 lines 29-53).

Okuno fails to teach (claim 44) wherein the inner pipe is formed from a flexible resin material, (claim 45) wherein the inner pipe is formed from a more flexible material than a material of the outer pipe, (claim 46) wherein the outer pipe is formed from a resin material nearly free from degassing and (claim 47) wherein the outer pipe is thinner than the inner pipe.

Hosono et al teaches a pipe structure (figure 2) comprising a double pipe (figure 2) having a resin inner pipe (col. 3 lines 13-18) and a resin outer pipe covering an outside of the inner pipe (col. 3 lines 18-20), and a discharge mechanism for discharging fluid in a space between the inner pipe and the outer pipe (figure 5, col. 3 lines 52-57, col. 4 lines 19-34), wherein said double pipe keeps a vacuum space between the inner pipe and the outer pipe (col. 3 lines 52-57, col. 4 lines 27-35), (claim 44) wherein the inner pipe is formed from a flexible resin

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material (col. 3 lines 13-18), (claim 45) wherein the inner pipe is formed from a more flexible material than a material of the outer pipe (col. 3 lines 34-45), (claim 46) wherein the outer pipe is formed from a resin material nearly free from degassing (col. 3 lines 13-18), and (claim 47) wherein the outer pipe is thinner than the inner pipe (col. 3 lines 34-45).

Okuno and Hosono et al are analogous art because they are both related to using a double pipe to pass a fluids or gas.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the resin pipes of Hosono et al in the vacuum process apparatus of Okuno because Hosono et al teaches an improved double walled pipe that provides improved flexibility, can be produced with improved dimensional accuracy, can be easily attached to an end connector (col. 2 lines 3-21) and that the double walled pipe can use the separate passages for the passing of different fluids or gases (col. 3 lines 54-57) improving pipe functionality.

10. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno (U.S. Pat 6,110,274) in view of Hosono et al (U.S. Pat 4,906,496).

Okuno as modified by Hosono et al discloses most all of the instant invention as applied to claim 39. Okuno as modified by Hosono et al fails to teach wherein the outer pipe has a thickness of about 10 μm to about 100 μm .

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to include the thickness of the outer pipe in the measurements of about 10 μm to about 100 μm because applicant does not disclose that a thickness of 10 μm to 100 μm provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's

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invention to perform equally well with a outer pipe thickness of 100 μm (discloses as .1mm) because Hosono et al also teaches that thickness' of the material can be as small as 50 μm and teaches that the invention is not limited to the recited dimensions and sizes (col. 3 lines 34-57).

Therefore, it would have been obvious matter of design choice to modify Okuno as modified by Hosono et al to obtain the invention as specified in claim 48.

11. Claim 41 rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno (U.S. Pat 6,110,274) in view of Hosono et al (U.S. Pat 4,906,496) as applied to claim 39 above, and further in view of Fuchita (U.S. Pat 5,837,316).

Okuno as modified by Hosono et al teaches a double pipe structure as recited in claim 39 for the reasons above, differing from the invention as recited in claim 41 in that their combined teaching lacks wherein the inner or outer pipe has a bellows structure or coil shape.

Fuchita teaches a double pipe structure incorporating a bellows (figure 2 reference number 37).

Okuno as modified by Hosono et al and Fuchita are analogous art because they are both related to semiconductor manufacturing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the bellows of Fuchita in the double pipe structure of Okuno as modified by Hosono et al because the use of bellows and coils in a flexible pipe are well known in the art of (Fukui et al 2001/0017164, and Tukahara et al U.S. Pat 5,829,483 and Fukasawa et al U.S. Pat 5,611,655) and Fuchita teaches that the chamber can be moved and aligned to adjust relative position between the double pipe and the crucible in order to reduce fluid flow disturbance (col. 8 lines 22-40).

12. Claim 42 rejected under 35 U.S.C. 103(a) as being unpatentable over Okuno (U.S. Pat 6,110,274) in view of Hosono et al (U.S. Pat 4,906,496) as applied to claim 39 above, and further in view of Nagata et al (U.S. Pat 4,368,219).

Okuno as modified by Hosono et al teaches a double pipe structure as recited in claim 39 for the reasons above, differing from the invention as recited in claim 42 in that their combined teaching lacks wherein the inner pipe in the outer pipe includes a plurality of inner pipes.

Nagata et al teaches a double pipe structure wherein the inner pipe in the outer pipe includes a plurality of inner pipes (figures 4a-c).

Okuno as modified by Hosono et al and Nagata et al are analogous art because they are both related moving a fluid through a pipe structure.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the plural inner pipes Nagata et al in the double pipe structure of Okuno as modified by Hosono et al because Nagata et al teaches an improved pipe structure that allows different fluids to flow in different portions of the pipe with improved flow characteristics (col. 8 line 35 – col. 9 line 30).

Response to Arguments

13. Applicant's arguments with respect to claim 39, 41-50 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Akiyama (U.S. Pat 6,440,504) – teaches a double pipe discharge mechanism where the pressure in the inner pipe is higher than the pressure between the inner and outer pipe.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul L Rodriguez whose telephone number is (703) 305-7399. The examiner can normally be reached on 6:00 - 4:30 T-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P Picard can be reached on (703) 308-0538. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul L Rodriguez
Examiner
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